

I/WE CLAIM:

1. In a dishwasher including a tub having bottom, opposing side, rear and top walls which collectively define a washing chamber adapted to receive and cleanse soiled kitchenware by spraying washing fluid onto the kitchenware from at least one wash arm, a pump and filtration assembly comprising:

a housing mounted at an opening provided in the bottom wall of the tub, said housing including a first plate portion sealed to the bottom wall about the opening, a second plate portion and a cap portion, said first and second plate portions being spaced to define an intake chamber of the housing, said second plate portion and said cap portion being spaced to define a pumping chamber of the housing;

at least one drive member extending through each of the first and second plate portions;

a chopper blade disposed in the intake chamber and drivingly connected to the at least one drive member;

an apertured plate positioned between the washing chamber and the pumping chamber adjacent the chopper blade;

a pumping unit arranged in the pumping chamber, said pumping unit including an impeller drivingly connected to the at least one drive member for directing washing fluid to the wash arm;

a conduit leading from the housing and fluidly interconnecting the pumping chamber with the wash arm;

a filter chamber adapted to receive a portion of the washing fluid entering the pumping chamber, said filter chamber including at least one enlarged opening provided with a fine mesh filtering screen for entrapping soil from the washing fluid in the filter chamber while

permitting cleansed washing fluid to be directed back into the washing chamber;

a filter shield non-rotatably fixed to the housing above said fine mesh filtering screen;

a drain exposed to the filter chamber;

a strainer member extending about the housing and fluidly interposed between the washing chamber and the intake chamber wherein, during operation of the pump assembly, the washing fluid is drawn in by rotation of the impeller through the strainer member into the intake chamber, directed through the apertured plate with soil entrained in the washing fluid being exposed to the chopper blade, and directed into the wash arm, while soil in the portion of the washing fluid diverted into the filter chamber can be collected and directed to the drain; and

a pressure relief system including a pressure regulation port, fluidly interconnecting the filter chamber and the washing chamber, and a pressure relief valve arranged at the pressure regulation port wherein, when the fine mesh filtering screen becomes clogged, the pressure relief valve opens the pressure relief port thereby permitting washing fluid to pass from the filter chamber past the pressure relief system and directly into the washing chamber.

2. In a dishwasher including a tub having bottom, opposing side, rear and top walls which collectively define a washing chamber adapted to receive and cleanse soiled kitchenware by spraying washing fluid onto the kitchenware from at least one wash arm, a pump and filtration assembly comprising:

a housing mounted at an opening provided in the bottom wall of the tub, said housing including an intake chamber and a pumping chamber;

a filter chamber adapted to receive a portion of the washing fluid entering the pumping chamber, said filter chamber including at least one enlarged opening provided with a fine mesh filtering screen for entrapping soil from the washing fluid in the filter chamber while permitting cleansed washing fluid to be directed back into the washing chamber; and

a pressure relief system including a pressure regulation port, fluidly interconnecting the filter chamber and the washing chamber, and a pressure relief valve arranged at the pressure regulation port wherein, when the fine mesh filtering screen becomes clogged, the pressure relief valve opens the pressure relief port thereby permitting washing fluid to pass from the filter chamber past the pressure relief system and directly into the washing chamber.

3. The pump and filtration assembly according to claim 2, wherein the pressure relief valve is constituted by a check ball having a defined mass, said check ball being adapted to seat against the pressure relief port to selectively prevent washing fluid from entering the washing chamber.

4. The pump and filtration assembly according to claim 3, wherein the mass of the check ball is established dependent upon a washing fluid volume of the filter chamber.

5. The pump and filtration assembly according to claim 3, wherein the pressure relief system further includes a check ball cage, said check

ball cage being adapted to retain the check ball at a position about the pressure relief port.

6. The pump and filtration assembly according to claim 2, wherein the pressure relief valve is constituted by a spring biased flapper valve, said flapper valve being adapted to seal the pressure relief port until a defined pressure head has developed in the filter chamber.

7. The pump and filtration assembly according to claim 6, wherein the flapper valve includes at least one leg formed from an elastic material, said at least one leg being deflected by the washing fluid once the defined pressure head has developed.

8. In a dishwasher including a tub having bottom, opposing side, rear and top walls which collectively define a washing chamber adapted to receive and cleanse soiled kitchenware by spraying washing fluid onto the kitchenware from at least one wash arm, a pump and filtration assembly comprising:

- a housing mounted at an opening provided in the bottom wall of the tub, said housing including an intake chamber and a pumping chamber;

- a filter chamber adapted to receive a portion of the washing fluid entering the pumping chamber, said filter chamber including at least one enlarged opening provided with a fine mesh filtering screen for entrapping soil from the washing fluid in the filter chamber while permitting cleansed washing fluid to be directed back into the washing chamber; and

means for relieving filter chamber pressure when the fine mesh filtering screen becomes clogged, said filter chamber pressure relieving means permitting washing fluid to flow from the filter chamber, past the pressure relief system and into the washing chamber.

9. The pump and filtration assembly according to claim 8, wherein said filter chamber pressure relieving means includes a pressure relief valve positioned to seal a pressure relief port open to the filter chamber.

10. The pump and filtration assembly according to claim 9, wherein the pressure relief valve is constituted by a check ball having a defined mass, said check ball being adapted to seat against the pressure relief port to selectively prevent washing fluid from entering the washing chamber.

11. The pump and filtration assembly according to claim 10, wherein the mass of the check ball is established dependent upon a washing fluid volume of the filter chamber.

12. The pump and filtration assembly according to claim 10, wherein the pressure relieving means further includes a check ball cage, said check ball cage being adapted to retain the check ball at a position about the pressure relief port.

13. The pump and filtration assembly according to claim 9, wherein the pressure relief valve is constituted by a spring biased flapper valve, said flapper valve being adapted to seal the pressure relief port until a defined pressure head has developed in the filter chamber.

14. The pump and filtration assembly according to claim 13, wherein the flapper valve includes at least one leg formed from an elastic material, said at least one leg being deflected by the washing fluid once the defined pressure head has developed.

15. A method of operating a dishwasher comprising:

drawing washing fluid from within a washing chamber defined in a tub of the dishwasher into a pump housing;

initially entrapping soil particles prior to directing the washing fluid to a pumping unit;

pumping at least a majority of the washing fluid to upper and lower wash arms for spraying onto kitchenware being washed in the dishwasher;

diverting a portion of the washing fluid into a filter chamber through a sampling port, said filter chamber having a filtering screen, a drain passage and a pressure regulation port;

allowing washing fluid to exit the filter chamber through the filtering screen while retaining soil particles in the filter chamber; and

automatically opening a pressure relief valve, arranged at the pressure regulation port, when the filtering screen becomes clogged, in order to allow washing fluid to exit the filter chamber and flow directly into the washing chamber through the pressure regulation port while bypassing the filtering screen.

16. The method of claim 15, further comprising: preventing washing fluid from entering the washing chamber through the pressure regulation port by seating a check ball against the pressure regulation port.

17. The method of claim 16, further comprising: altering a mass of the check ball dependent upon a washing fluid volume of the filter chamber.

18. The method of claim 16, further comprising: retaining the check ball about the pressure relief port by a check ball retainer cage.

19. The method of claim 15, further comprising: preventing washing fluid from entering the washing chamber through the pressure regulation port by sealing the pressure regulation port with a flapper valve until a defined pressure head has developed in the filter chamber.

20. The method of claim 19, further comprising: opening the flapper valve by deflecting an elastomeric leg of the flapper valve by the washing fluid in the filter chamber once the defined pressure head has developed.